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Marine Algae In Biofuel Production- A Review

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Biofuel is biodegradable as it emits less carbon dioxide and nitrogen dioxide. Algae have emerged as one of the most promising sources for biofuel production with potential to replace the fossil-based fuels. In biofuel production, upstream process includes cultivation methods, molecular techniques and micro algae-bacterial infections whereas downstream process includes harvesting and drying, extraction, purification and bio chemical conversion. Marine algae have relatively high photon conversion efficiency and rapidly synthesize biomass through assimilating abundant resources in the nature such as sunlight, carbon dioxide and inorganic nutrients. It improves the air quality by absorbing atmospheric CO₂, and utilizes the minimal water. Microalgae biofuel production have low concentration of biomass in the culture and low oil content from the conventional agricultural practices, micro algae farming is one of the most costly and complicated. Microalgae has low biomass production, low lipid content in the cells and small size of the cells that makes harvesting process very costly. These difficulties can be minimized or overcome by the improvement of the harvesting technology. The Catalytic processes are more appropriate in converting the biomass to biodiesel, especially nano catalysts which have the good capacity in improving the product quality and attaining the best operating conditions. Biofuels have potential to contribute to a substantial production in the overall greenhouse gas emissions.

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